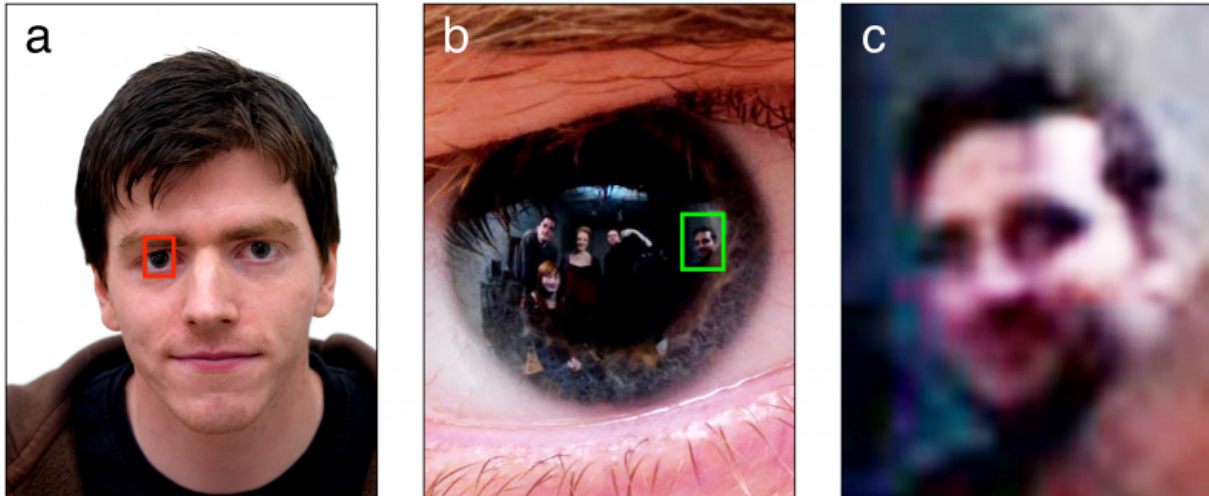


Identifying trends in article-level metrics

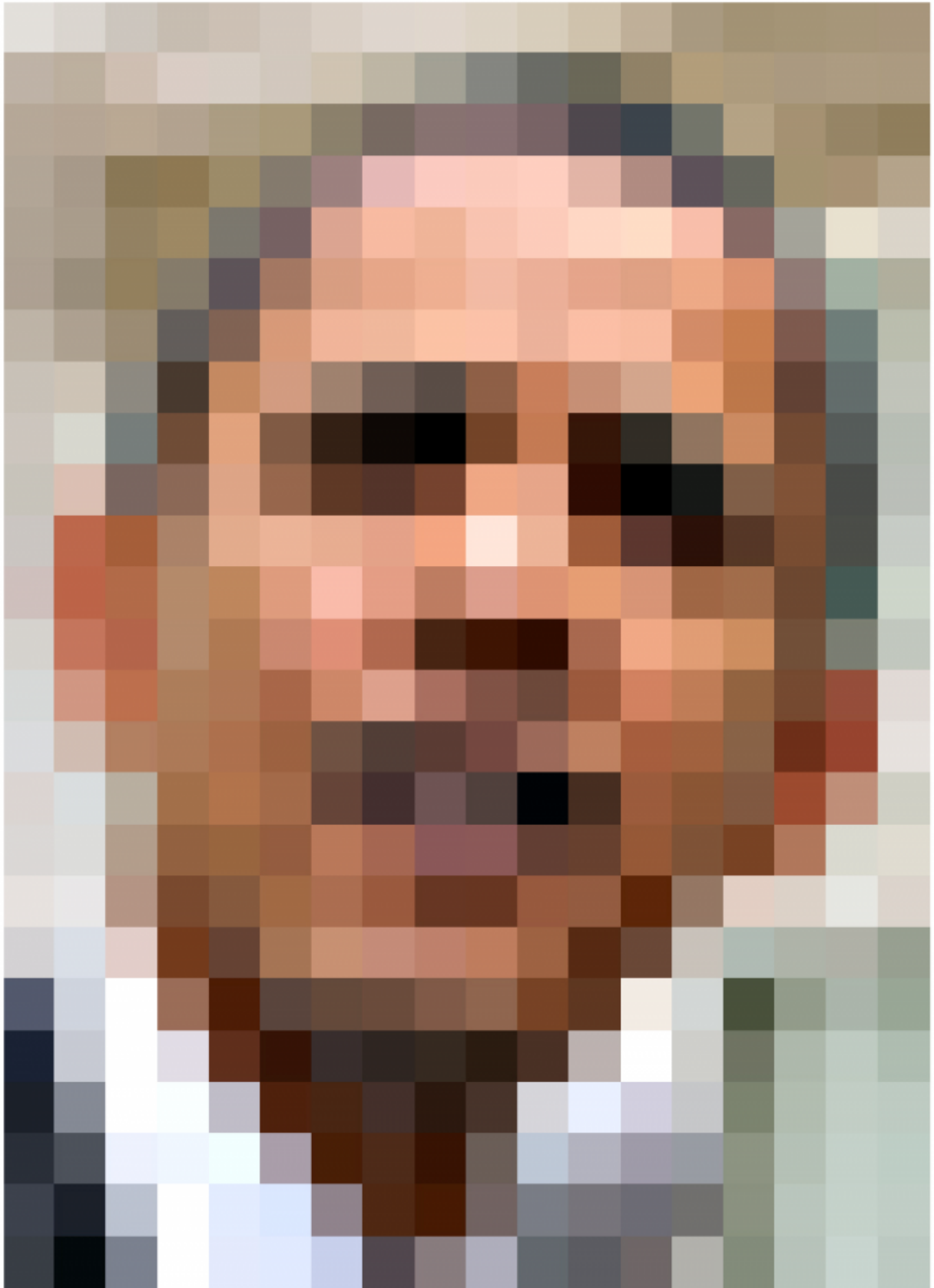
June 4 2015, by Adrian Aldcroft



In late December 2013, *PLOS ONE* published an article from UK-based Psychologists Rob Jenkins and Christie Kerr titled "Identifiable Images of Bystanders Extracted from Corneal Reflections". Using high-resolution photography, Jenkins, from the University of York, and Kerr, from the University of Glasgow, demonstrate that humans can recognize faces in the reflection of photographed eyes.

As high-resolution photography becomes increasingly accessible and portable, the possibilities of linking technology with the human brain become increasingly exciting. The notion of an image within an image,

or a crime scene revealed in the reflection of an eye, creates endless possibilities for the scientifically minded. There are potential applications to criminal investigations with, for instance, the identity of a suspect being revealed within the eye of a photographed victim. It's a bit creepy, but also fascinating—it's not difficult to see why the [article](#) might capture the public's imagination.



But perhaps even more amazing than the technology is the ability we have to recognize faces even in the absence of fine details we might have thought were crucial. An image of a well-known politician serves as an example:

In an interview with the University of York, Dr Jenkins described the research:

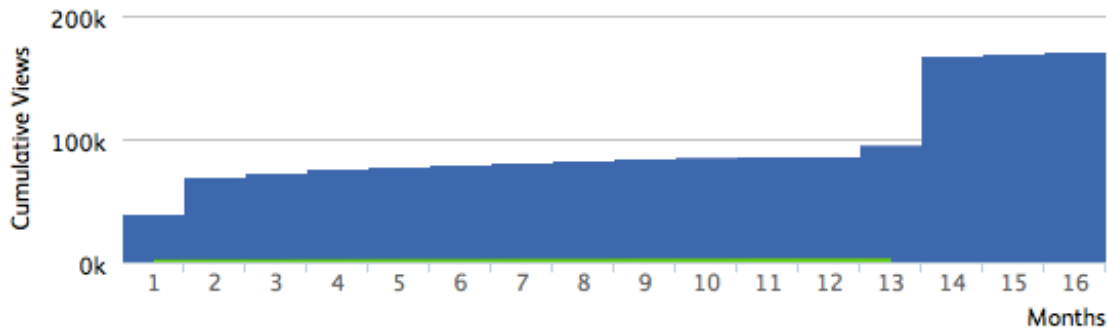
"The pupil of the eye is like a black mirror. To enhance the image, you have to zoom in and adjust the contrast. A face image that is recovered from a reflection in the subject's eye is about 30,000 times smaller than the subject's face. Our findings thus highlight the remarkable robustness of human face recognition, as well as the untapped potential of high-resolution photography."

The study conjures scenes from science fiction, most notably Ridley Scott's *Blade Runner* and the often-ridiculed "zoom-enhance" technology depicted in television crime dramas. This was a study bound to capture the attention of the internet—and it did. At the time of this writing, the article has more than 170,000 views and over 1,500 Twitter mentions. It is the fourth most-tweeted article ever published in *PLOS ONE*.

The overall picture of views and mentions on social media is impressive, but looking at the patterns in the Article-Level Metrics (ALMs) reveals some unexpected twists.

Take, for example, the ALMs graph illustrating cumulative views of the

article:



As anticipated, the article attracted a large audience from the beginning. In the first month after publication, the article had nearly 40,000 views. We contacted Rob Jenkins for some comments on his experience:

I kept an eye on these metrics right from the start. I had done a lot of press on the day of publication—mainly radio interviews around the world—and was interested to see if this press promotion would register on the ALM tracker. I remember feeling really pleased towards the end of the day when the number of [page views](#) entered double digits. My goal of hitting 100 page views by the next day seemed within reach.

By the morning, the story had completely blown up, and the page views leaped up orders of magnitude in a matter of days. I always thought the story had the potential to capture people's imagination, but I think the timing was the key. The paper was published on December 26th 2013,

when a lot of people had free time on their hands.

But when looking at the cumulative views, what is unusual is that, after the initial attention and tapering off—a typical pattern—there was a major resurgence in views in January 2015, over a year after the article was published. Rob Jenkins commented:

Every few months I returned to the article metrics to get an idea of their trajectory. The typical pattern seems to be that page views peak in the first month and then fall off sharply. That was certainly the case here. Having originally been pleased that 100 seemed within reach, I was now slightly crestfallen that they would never reach 100,000.

Then something unexpected happened. In December 2014, one year after publication, the page views showed an anomalous spike—from a few hundred per month to nearly 9000. Curious. But I assumed that the established pattern would reassert itself the following month. In fact, January 2015 was the busiest month ever, with over 72,000 page views.

Looking at the data, it is clear that somehow (unusually) the article managed to spark a second life. With a flurry of catchy hashtags, including #Woah #BladeRunner, #Spooky, and #Enhance Enhance Enhance, the study came back into the public consciousness. While the several pages of Twitter discussions reveal a few noteworthy tweets from potential "hub" Twitter users, it is not trivial to find an apparent, specific event that triggered the second wave of article views.

Dr Jenkins was similarly perplexed:

"I'm afraid I don't know what triggered the jump in views. I'm not aware of any [media coverage](#) after the first wave early 2014. I presented the study at an Interpol meeting in Autumn 2014, and I still include it in talks to general audiences, but I can't draw a line from any of those

events to the ALM profile. I'm sorry I can't offer any more insight."

Discussed



So, unfortunately, neither the ALMs nor the author can provide a satisfactory explanation for the article's resurgence in popularity. But, after a slightly deeper investigation, we have come up with a few theories:

Holiday viewing

Perhaps, as Dr Jenkins mentioned, it was the time of year. The second peak in views came during the holiday season, when work is a little slower and there is time to reflect upon the notable events and discoveries of the last year, with a focus on the fun, new, and imaginative. Could it be that the second wave of views came as scientists kicked back with some eggnog, behind the soft glow of their computer screens, and reflected upon the articles that captured the public's attention over the past 12 months?

Twitter

Perhaps the second wave of views could be explained through Twitter, where the article had a significant presence. One of the first notable tweets in the article's comeback came on 29 December 2014 from Rowan Hooper, News Editor for New Scientist. He mentioned the article on his Twitter feed, garnering ~300 retweets and ~175 favorites. A few days later, Ed Yong, a British science writer with over 65,000 followers on Twitter, also mentioned the article, and his tweet was retweeted ~750 times and favorited ~500 times. It seems plausible that these notable mentions are the source of the article's new life.



Ed Yong
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 Follow

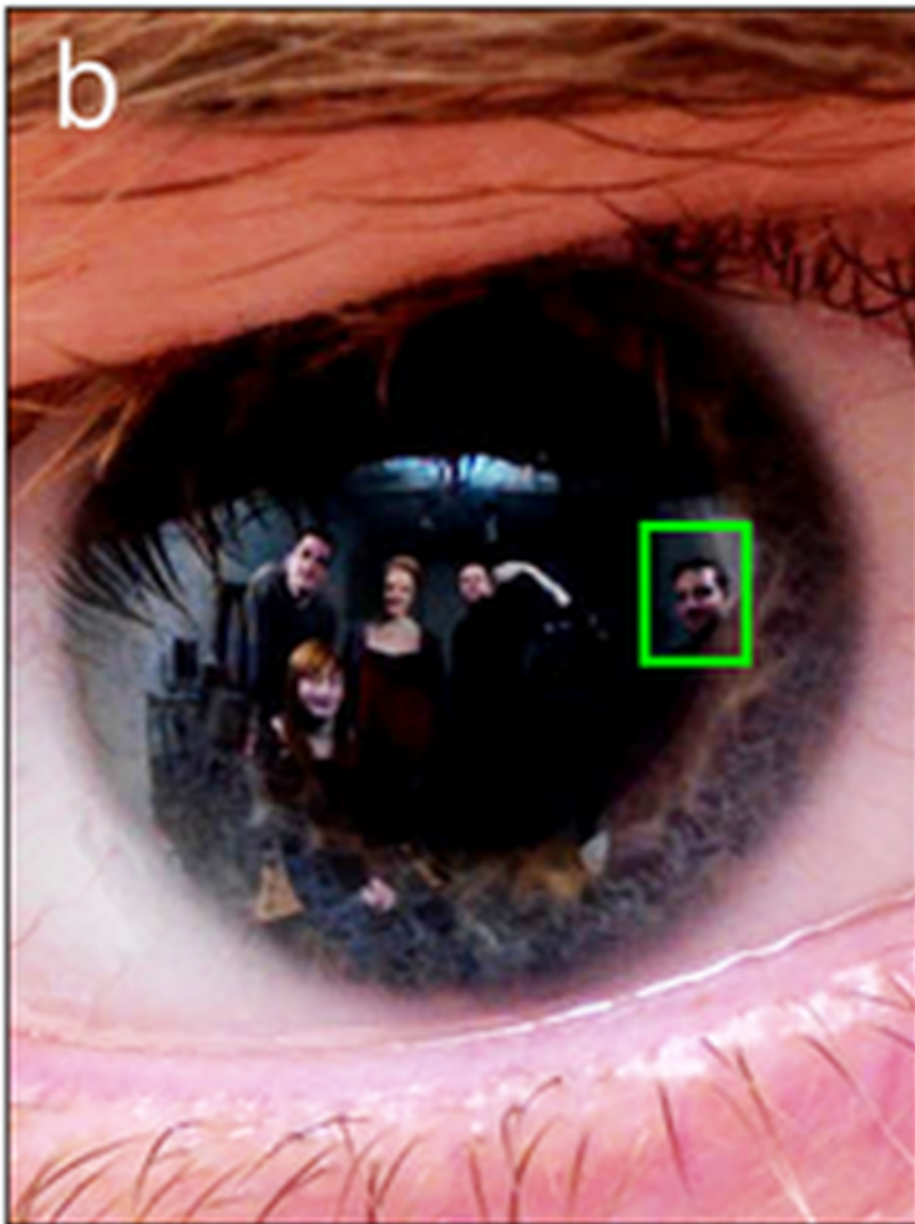
ENHANCE RT [@rowhoop](#): Very Blade Runner, this: extracting images from corneal reflections ow.ly/GwUSZ



Buzzfeed

When published, the article received significant media attention including coverage in The Telegraph and Scientific American, but after

the first few weeks, the coverage died down. However there is a notable event that coincides with the resurgence of the article's popularity. On 29 December, the popular website BuzzFeed published an entry titled "46 Important Things Science Taught Us In 2014," where the article was featured at number 18. With frequent links on [social media](#), BuzzFeed has become ubiquitous in our internet lives, and coverage at the end of the year, where there is an obsession with best-of lists, could well be responsible for bringing a new audience to the article.



Finally.... The Verdict:

An investigation of the ALMs and media coverage provides a number of clues to explain the viewing pattern, but we cannot draw any firm conclusions beyond an affirmation that the world—and in particular, the Internet—is a complex and highly socially networked place. While ALMs cannot provide an interpretation, they do provide us with valuable data that reflects the way science is communicated in the 21st century. The most likely explanation is, of course, a complex one, with several factors at play, some more than others, but all playing a part.

Still, in our continuing quest for an answer, we have contacted our local CSI unit to see if we can borrow some of their forensic smarts.

More information: "Identifiable Images of Bystanders Extracted from Corneal Reflections." [DOI: 10.1371/journal.pone.0083325](https://doi.org/10.1371/journal.pone.0083325)

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